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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/037,190	11/09/2001	Martin Dubs	H60-102 US	6717

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EXAMINER

VERSTEEG, STEVEN H

ART UNIT PAPER NUMBER

1753

DATE MAILED: 02/28/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No. 10/037,190	Applicant(s) DUBS, MARTIN
Examiner Steven H VerSteeg	Art Unit 1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 09 November 2001.
- 2a) This action is FINAL.
- 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-12 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-12 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 09 November 2001 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 - 1. Certified copies of the priority documents have been received.
 - 2. Certified copies of the priority documents have been received in Application No. _____.
 - 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 - * See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 - a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) Interview Summary (PTO-413) Paper No(s) _____.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other:

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: “of”, second occurrence, should be “or” on page 14, line 11.

Appropriate correction is required.

Claim Objections

2. Claims 4, 7, and 11 are objected to because of the following informalities: “type of” should be deleted in claims 4 and 7 at lines 2 and 2 respectively; “and/or” should be “or” in claim 11, line 4. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-12 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. “Asymmetric layer formation of the disk” is critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). Applicant is directed to page 3, lines 1-6 where Applicant explicitly states that the subject matter is essential.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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6. Claims 3, 5-7, 9, 10, and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. In claims 3, 5-7, and 12, it is unclear if it is "substoichiometric silicon oxide" and stoichiometric "silicon oxinitride" or if it is "substoichiometric silicon oxide" and "substoichiometric silicon oxinitride". The examiner has interpreted the claims as though the limitation is "substoichiometric silicon oxide" and "substoichiometric silicon oxinitride".

8. Claim 6 is unclear because it suggests that the material of the protection layer has already been presented. It is recommended that Applicant delete "of" in line 2 and change it to "is" and change "is" in line 3 to "and is" to overcome the rejection.

9. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 9 recites the broad recitation " $1.47 \leq n \leq 1.7$ ",

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and the claim also recites “preferably $1.5 \leq n \leq 1.6$, in particular $n \leq 1.57$ ” which is the narrower statement of the range/limitation.

10. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by “such as” and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 10 recites the broad recitation “ $10^{-4} \leq k \leq 5 \times 10^{-3}$ ”, and the claim also recites “preferably $k \leq 10^{-3}$ ” which is the narrower statement of the range/limitation.

11. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by “such as” and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely

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exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 12 recites the broad recitation “minimally 10 nm”, and the claim also recites “preferably, of maximally 50 nm” which is the narrower statement of the range/limitation. It is recommended that Applicant amend the claim to be “10 nm – 50 nm” to overcome the rejection.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 1, 2, 4, and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,965,228 to Kügler in view of EP 516,178 to Itoh and US 6,017,603 to Tokuda et al. (Tokuda).

14. For claim 1, Applicant requires a method for producing hybrid disks with a first substrate that is transparent in a given spectral band, a semi-transparent layer in the given band, a transparent layer in the given band, and a reflection layer system. The reflection layer and the semi-transparent layer are deposited by the same vacuum coating method. A moisture protection layer is deposited over the substrate that is transparent in the given band and deposited by the same vacuum coating method as the reflection and semi-transparent layers.

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15. For claim 2, Applicant requires a method for producing hybrid disks with a first substrate that is transparent in a given spectral band, a semi-transparent layer in the given band, a transparent layer in the given band, and a reflection layer system. A moisture protection layer is deposited over the substrate that is transparent in the given band and deposited by sputtering.

16. Kügler discloses a method for producing an information carrier (title). The information carrier is a disk (col. 1, l. 36-67). The disk comprises a substrate 2_u, semi-transparent layer 1, a spacer layer 5, and a reflection layer 2_o. The substrate is transparent in some given band. The semi-transparent layer and the spacer layer are inherently in the same given band (Figure 2) because otherwise, the incoming beam would be refracted and Kügler shows that it is not refracted. The semi-transparent layer is deposited by sputtering (col. 9, l. 52-56).

17. Kügler does not disclose that the reflection layer is deposited by sputtering or the use of a moisture protection layer on the substrate.

18. Itoh discloses that in a disk system, a moisture protection layer of silicon dioxide should be used to protect the disk and make it more weather resistant (col. 6, l. 7-23). The moisture protection layer is deposited by sputtering (col. 6, l. 46-49).

19. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Kügler to use a moisture protection layer of silicon dioxide deposited by sputtering because of the desire to make the disk more weather resistant.

20. Tokuda discloses that in disks, aluminum reflective layer can be deposited by sputtering conventionally (col. 1, l. 20-40).

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21. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Kügler to deposit the aluminum layer by sputtering because sputtering is a conventional method of deposition for aluminum in disks.

22. Thus, the reflection layer, moisture protection layer, and semi-transparent layer are all deposited by sputtering and claims 1 and 2 are met.

23. For claim 4, Applicant requires the deposition method of the reflection layer, moisture protection layer, and semi-transparent layer all to be deposited by sputtering. As noted above, the limitation is met.

24. For claim 8, Applicant requires the refractive index of the moisture protection system to be equal to the refractive index of the substrate. Inherently, the index of refraction of the moisture protection layer and the substrate are identical otherwise, the protection layer would alter the disk reflection properties and ruin the disk.

25. For claim 9, Applicant requires the refractive index of the moisture protective layer to be 1.47.

26. For claim 10, Applicant requires the extinction constant to be $10^{-4} - 5 \times 10^{-3}$. Because silicon dioxide is used, the limitations are met.

27. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,965,228 to Kügler in view of EP 516,178 to Itoh and US 6,017,603 to Tokuda et al. (Tokuda) as applied to claim 1 above, and further in view of *Thin Film Processes* by Vossen et al. (Vossen).

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28. For claim 11, Applicant requires the moisture protection layer to be deposited by reactive sputtering a silicon target in an atmosphere of oxygen. Itoh discloses that the sputtering is performed by using a silicon dioxide target in an argon atmosphere.

29. Therefore, Kügler in view of Itoh and Tokuda does not disclose reactive sputtering a silicon target in an atmosphere of oxygen.

30. Vossen discloses that reactive sputtering can be either sputtering a target of the desired layer in an atmosphere of the reactant or sputtering a target of a single component in an atmosphere of the reactant. In each case, the reactive sputtering is equivalent (pg. 48-49).

31. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Kügler in view of Itoh and Tokuda to reactive sputter a silicon target in an atmosphere of oxygen because of the knowledge that the reactive sputtering methods are equivalent.

Conclusion

In the event that papers are missing from this communication, please contact the Customer Service Center for Technology Center 1700 at (703) 306-5665.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven H VerSteege whose telephone number is (703) 305-4473. The examiner can normally be reached on Mon - Thurs (7:30 AM - 6:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X Nguyen can be reached on (703) 308-3322. The fax phone numbers for the

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organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



Steven H VerSteeg
Primary Examiner
Art Unit 1753

shv
February 26, 2003